

Emotional and Social Drivers of Consumer Behaviour in Live-Streaming Commerce: A Conceptual Integration of PAD and SOR Models

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Abstract. Live-streaming commerce has reshaped digital retail by integrating real-time interaction and immersive social environments that drive emotional responses and stimulate impulsive buying. Although the Stimulus–Organism–Response (SOR) framework and the Pleasure–Arousal–Dominance (PAD) model have been frequently applied in previous studies, their integration receives little attention, and the dominance dimension is often overlooked. Therefore, this study systematically maps the intellectual structure and thematic evolution of research to examine the relationships between social presence, affective states, and impulsive buying in live-streaming commerce. Using a bibliometric-based systematic literature review, 998 articles published between 2021 and 2026 were retrieved through Publish or Perish and Google Scholar. From this pool, 18 Scopus-indexed business and management studies were chosen as they met the PRISMA inclusion criteria. VOSviewer analysis reveals a strong empirical concentration on pleasure and arousal as primary mediating mechanisms, while the dominance is noticeably under-explored and the integration of SOR is often incomplete. This study enhances the PAD–SOR framework by demonstrating how the interplay between emotional arousal and emotion regulation influences impulsive purchasing in immersive digital commerce.

Keywords: *Impulsive buying; Live-streaming commerce; Pleasure–Arousal–Dominance (PAD); Social presence; Stimulus–Organism–Response (SOR).*

Abstrak. *Perdagangan live-streaming telah mengubah ritel digital dengan mengintegrasikan interaksi waktu nyata dan lingkungan sosial yang imersif yang mendorong respons emosional serta menstimulasi pembelian impulsif. Meskipun kerangka Stimulus–Organism–Response (SOR) dan model Pleasure–Arousal–Dominance (PAD) sering digunakan dalam penelitian sebelumnya, integrasi keduanya masih kurang mendapat perhatian, dan dimensi dominasi sering*

diabaikan. Oleh karena itu, penelitian ini secara sistematis memetakan struktur intelektual dan evolusi tematik penelitian untuk mengkaji hubungan antara kehadiran sosial, kondisi afektif, dan pembelian impulsif dalam perdagangan live-streaming. Dengan menggunakan tinjauan literatur sistematis berbasis bibliometrik, sebanyak 998 artikel yang diterbitkan antara tahun 2021 hingga 2026 diperoleh melalui Publish or Perish dan Google Scholar. Dari jumlah tersebut, 18 studi bidang bisnis dan manajemen yang terindeks Scopus dipilih karena memenuhi kriteria inklusi PRISMA. Analisis menggunakan VOSviewer menunjukkan adanya konsentrasi empiris yang kuat pada pleasure (kesenangan) dan arousal (keterangsangan) sebagai mekanisme mediasi utama, sementara dimensi dominance (dominasi) masih relatif kurang dieksplorasi dan integrasi SOR sering kali tidak lengkap. Penelitian ini menyempurnakan kerangka PAD–SOR dengan menunjukkan bagaimana interaksi antara keterangsangan emosional dan regulasi emosi memengaruhi pembelian impulsif dalam konteks perdagangan digital yang imersif.

Kata kunci: Live-streaming commerce; Pembelian impulsif; Pleasure–Arousal–Dominance (PAD); Social presence; Stimulus–Organism–Response (SOR);

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BACKGROUND

Due to the rapid expansion of e-commerce, contemporary retail has been fundamentally transformed, enabling consumers to purchase goods and services through digital platforms with greater efficiency and convenience. In this shift, live-streaming commerce has arisen as a unique trend in online retail, which integrates real-time interaction, immersive media environments, and immediate purchasing mechanisms (Dai, 2024; Utami, 2024). Whereas traditional e-commerce uses mostly fixed product information and asynchronous messaging, live-streaming commerce enables real-time interaction between streamers and viewers, fostering a shopping setting that is rich in social connection and emotional energy (Duong & Ta, 2024; Gumay et al., 2024; Min & Tan, 2022). Sellers demonstrate products through live video broadcasts, provide detailed explanations, offer flash sales, and interact directly with audiences (Mardhiana, 2024). The inclusion of these features boosts social immersion and emotional responsiveness, which are known to correlate with impulsive shopping, marked by spur-of-the-moment choices, intense emotional states, and reduced logical consideration (Chung et al., 2025; Ngo et al., 2024; Xu & Ruan, 2023).

The rapid diffusion of live-streaming retail, particularly during and after the COVID-19 pandemic, has stimulated broad academic interest (Tan et al., 2024). Scholars have examined its implications for tourism (Liang et al., 2024), crisis-related empowerment processes (Deng et al., 2024), supply chain operational strategies (X. Zhang et al., 2024), and generational differences in consumer engagement (Tan et al., 2024). At the behavioural level, much of this research is grounded in the Stimulus–Organism–Response (SOR) framework, which posits that environmental stimuli influence internal psychological states, which in turn shape behavioural outcomes (Bui et al., 2025; Hong-Ngoc, 2025; Lin et al., 2023; Mehrabian & Russell, 1974; Xia et al.,

2024). In live-streaming contexts, platform attributes such as interactivity, entertainment value, streamer credibility, promotional intensity, and real-time communication function as stimuli that activate consumers' internal emotional processes before translating into purchase decisions (Xiao et al., 2026). The perspective emphasises that impulsive buying is not a direct result of outside stimuli. Instead, it is an indirect outcome shaped by emotional responses.

Within this framework, social presence has consistently been conceptualised as a central social stimulus. Social presence refers to the perceived sense of human warmth, co-presence, and interpersonal connection in digitally mediated environments. Empirical findings indicate that when customers feel both empirically present and emotionally engaged, their impulse buying behaviour will be amplified due to increased positive feelings and inspiration (Liu et al., 2025; Sun et al., 2023). Likewise, interactivity, vividness, and media richness could strengthen perceived social presence, and this will further boost emotional responses and purchase intentions (Zhang & Shi, 2022). As streamers and audiences develop closer ties, engagement and trust deepen, and this has demonstrated trust as a core psychological driver that impacts views on the trustworthiness and overall integrity of a brand (Lai et al., 2025; Tan et al., 2024). Collectively, these findings suggest that the emotional mechanism is a critical mediator in translating social stimuli into behavioural outcomes.

The affective processes underlying these mechanisms are conceptually rooted in the Pleasure–Arousal–Dominance (PAD) model proposed by Mehrabian and Russell (1974). The PAD framework classifies the fundamental emotions into three dimensions: pleasure, representing positive affective valence; arousal, reflecting activation and excitement; and dominance, indicating perceived control or autonomy within the environment. Together, these dimensions provide a comprehensive representation of emotional responses to environmental stimuli. Tong et al. (2023) argued that applying the full three-dimensional PAD structure is necessary to capture the complexity of consumer behaviour in immersive digital contexts.

Despite this theoretical foundation, a critical examination of the live-streaming commerce literature reveals a systematic imbalance in the operationalisation of emotional constructs. Most empirical research on impulsive buying has placed an overwhelming focus on pleasure and arousal as mediating factors, while the dimension of dominance is often overlooked. For instance, Zhu and Vijayan (2025) demonstrated that pleasure and arousal are the factors that mediate the relationship between live-streaming characteristics and impulsive purchasing without incorporating dominance. In contrast, Xu and Ruan (2023) integrated all three dimensions and showed that dominance significantly shapes consumer engagement, particularly when consumers feel socially overloaded during live-streaming commerce. These findings imply that perceived psychological control may influence not only the magnitude but also the direction of consumer responses, although its role remains insufficiently explored across the broader research landscape.

Beyond social stimuli, situational factors such as time pressure can further amplify impulsive buying through affective pathways. According to previous studies that integrate the SOR framework with Schachter–Singer's Two-Factor Theory of Emotion, urgency cues and limited-time promotions stimulate impulsive purchasing mainly via emotional arousal instead of cognitive appraisal (Sun et al., 2023). Such mechanisms may simultaneously heighten arousal and attenuate perceived control, suggesting that

dominance is conceptually relevant in high-pressure live-streaming environments. However, this dimension is rarely examined explicitly, and thus there is an incomplete representation of emotional dynamics in digital commerce.

Although research that employs SOR, PAD, Social Impact Theory, and Self-Determination Theory has expanded rapidly, the literature remains conceptually fragmented. When studying these topics, researchers often isolate their analysis to either social presence, interaction quality, promotional intensity, or perceived enjoyment. The simplification of emotional mediators into mere positive feelings neglects a thorough investigation of how pleasure, arousal, and dominance interact. Additionally, impulsive buying is frequently viewed as one isolated outcome, with limited research on how different emotional dimensions work together within a cohesive theoretical model. In other words, the intellectual architecture linking social presence, emotional states, and impulsive buying in live-streaming commerce has not been comprehensively mapped.

Unlike prior narrative reviews, this study quantitatively maps the intellectual structure of the literature by conducting a bibliometric-based systematic literature review to evaluate the structural integration between PAD and SOR in live-streaming commerce research. Specifically, it maps thematic clusters, identifies dominant and emerging research trajectories, and evaluates patterns in the operationalisation of pleasure, arousal, and dominance as mediating mechanisms. The analysis reveals a significant leaning towards pathways of pleasure and arousal that result in short-term, impulsive consequences, with dominance being a much less represented factor. By reintroducing dominance into the PAD–SOR structure, this study improves the PAD–SOR conceptual framework that integrates affective activation with perceived control, thereby enriching the theoretical understanding of consumer agency, emotional regulation, and impulsive behaviours within immersive digital shopping ecosystems.

THEORETICAL REVIEW

Stimulus–Organism–Response (SOR)

The Stimulus–Organism–Response (SOR) framework originates from early developments in communication and psychological theory, notably proposed by Hovland et al. (1953), which emphasized the influence of external stimuli on internal psychological processes and subsequent behavioral responses. In contemporary literature, SOR is widely used to explain consumer behavior, highlighting that external stimuli do not directly trigger behavior but operate through cognitive and affective processes (Bui et al., 2025; Lin et al., 2023; Xia et al., 2024).

Pleasure–Arousal–Dominance (PAD)

The Pleasure–Arousal–Dominance (PAD) model provides a foundational framework in environmental psychology for explaining individuals' emotional responses to stimuli (Mehrabian & Russell, 1974). It conceptualizes emotions along three dimensions: pleasure (emotional valence), arousal (activation level), and dominance (perceived control). Contemporary research, however, tends to emphasize pleasure and arousal while frequently overlooking dominance (Zhu & Vijayan, 2025; Xiao et al., 2026), reflecting a simplification of emotional structure. Nevertheless, evidence suggests that dominance plays a critical role in shaping responses, particularly under conditions of pressure or complexity, as it reflects perceived control and autonomy (Xu & Ruan, 2023).

Impulsive Buying

Impulsive buying refers to spontaneous and unplanned purchasing driven by strong emotional impulses (Chung et al., 2025; Ngo et al., 2024; Xu & Ruan, 2023). It is characterized by rapid decision-making with minimal cognitive evaluation and a strong influence of situational psychological states. Prior studies indicate that impulsive purchases are primarily shaped by affective reactions rather than rational assessment, where positive emotions and heightened arousal intensify purchase urgency (Sun et al., 2023). Moreover, such behavior is more likely to occur under conditions of time pressure, high environmental stimulation, and intense social interaction (Wang et al., 2025; Wen et al., 2025; Utomo et al., 2025).

RESEARCH METHODS

This study employed a bibliometric-based systematic literature review (SLR) approach that integrates structured review procedures with quantitative bibliometric analysis. The integration of SLR with bibliometric approaches facilitates a thorough identification, appraisal, and merging of research findings, concurrently illustrating the knowledge network and the progression of ideas in a particular academic area (Zupic & Čater, 2015). Bibliometric analysis also aids the visualisation of co-occurrence networks and thematic clusters, whereas SLR procedures ensure transparency in article selection and conceptual alignment. This methodological integration is widely recognised as a robust strategy for theory development and knowledge synthesis, particularly in emerging and fragmented research domains (Donthu et al., 2021; Paul et al., 2021). Moreover, these scientific mapping tools have proven their ability to objectively and structurally illustrate the conceptual links within research themes (Aria & Cuccurullo, 2017). Therefore, this approach is appropriate for examining the integration of the PAD and SOR frameworks within live-streaming commerce research.

The data collection process was conducted through a systematic search using Google Scholar, assisted by Publish or Perish software. Google Scholar was selected because of its broad multidisciplinary coverage and capacity to retrieve both indexed and less-indexed scholarly publications (Gusenbauer & Haddaway, 2020; Haddaway et al., 2015). The search employed Boolean operators with the following keyword structure: (“Pleasure” OR “Arousal” OR “Dominance”) AND (“Social presence” OR “Live streaming”) AND (“Impulsive buying” OR “Impulse purchase”). The publication period was limited to 2021–2026 to ensure contemporary relevance. After applying a maximum retrieval limit of 1,000 records, the search identified 998 articles that matched the initial criteria.

To ensure conceptual relevance and methodological rigour, a multi-stage screening process was applied based on PRISMA principles. During the first stage of initial screening, titles and abstracts were examined to filter out studies related to clinical, neurological, or non-consumer psychology, along with any that did not pertain to live-streaming commerce or consumer actions. In the second stage, full-text assessments were conducted to refine eligibility. Articles were excluded if they were not written in English, were not indexed in Scopus, were outside the business and management domain, lacked an explicit discussion of live-streaming commerce, or did not address emotional constructs relevant to PAD or SOR. After applying these inclusion and exclusion criteria, 18 Scopus-indexed articles were found to meet all requirements and were therefore

retained for further analysis. While Google Scholar facilitated a wide-ranging initial search for maximum coverage, the final selection prioritised Scopus-indexed journals to uphold quality, ensure comparability, and maintain academic rigour.

The selected articles were exported to Mendeley for metadata cleaning and keyword standardisation. This process involved removing duplicate records, harmonising synonymous terms, and ensuring consistency in keyword representation. The refined dataset was subsequently analysed using VOSviewer (van Eck & Waltman, 2022) to conduct keyword co-occurrence analysis and generate network and overlay visualisations. Co-occurrence thresholds were applied to identify dominant and emerging themes within the dataset. Through this bibliometric mapping combined with systematic qualitative synthesis, the study identified thematic clusters and evaluated the relative prominence of pleasure, arousal, and dominance. Moreover, the patterns in the integration of PAD and SOR frameworks were also investigated to explain impulsive buying behaviours in live-streaming commerce contexts.

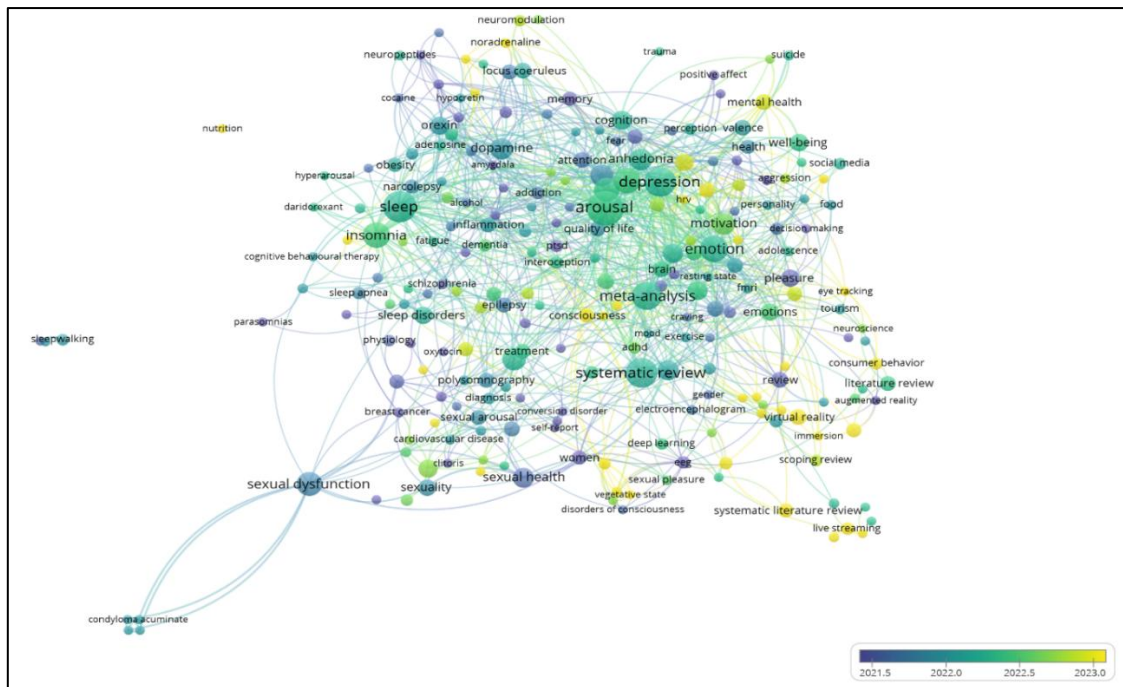


Figure 1. Overlay Visualisation

RESULTS AND DISCUSSIONS

A keyword co-occurrence analysis was conducted using VOSviewer to identify dominant research themes and examine conceptual interconnections within the dataset, with the overlay visualisation presented in Figure 1. The map shows a strong thematic concentration around affective and neuropsychological constructs, including arousal, emotion, depression, mental health, and related physiological themes. These nodes form dense clusters, primarily associated with mental health, neuroscience, and physiology. Conversely, those focused on consumer behaviours and live-streaming commerce appear smaller, exhibit weaker connections, and are located on the periphery. Moreover, methodological approaches like systematic reviews and meta-analyses serve as bridges

between various fields, connecting multiple thematic clusters rather than directly representing affective constructs.

A temporal shift is indicated by the colour gradient, where older clusters were primarily about affective science and neuropsychology, and more recent nodes (2022–2023) increasingly lean into *consumer behaviour*, *virtual reality*, *immersion*, and *live streaming*. This pattern indicates that although pleasure and arousal have been conceptually well-developed, they have only recently been incorporated into studies of digital commerce. The research on affective science and consumer behaviour in live-streaming commerce was developed in separate, disconnected groups, and this separation indicates that the two areas have not yet been systematically integrated.

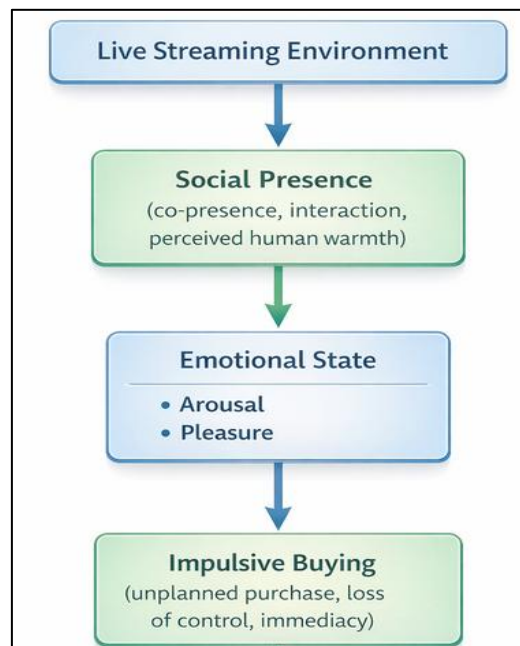


Figure 2. Conceptual Positioning Framework

Following the bibliometric mapping and qualitative synthesis, Figure 2 offers a summary of the most common conceptual arrangements observed within the reviewed studies. The live-streaming environment functions as a stimulus characterised by real-time interaction, immediacy, and perceived human warmth, which enhances social presence as a primary stimulus within the SOR structure. The feeling of being socially connected triggers positive emotions like pleasure and a heightened sense of excitement, which in turn shape how individuals respond to digital experiences, commonly resulting in impulsive shopping behaviours such as unplanned purchases, a need for instant satisfaction, and reduced self-restraint.

However, the conceptual pattern also reveals a structural gap. Dominance, which represents perceived psychological control, is rarely incorporated. The literature appears to have placed a greater emphasis on affective activation, while the effect of affective regulation has been overlooked. In other words, while current models explain consumer enthusiasm and contentment in live-streaming, they offer a limited understanding of how perceived control impacts impulsive purchasing, especially in high-stakes situations.

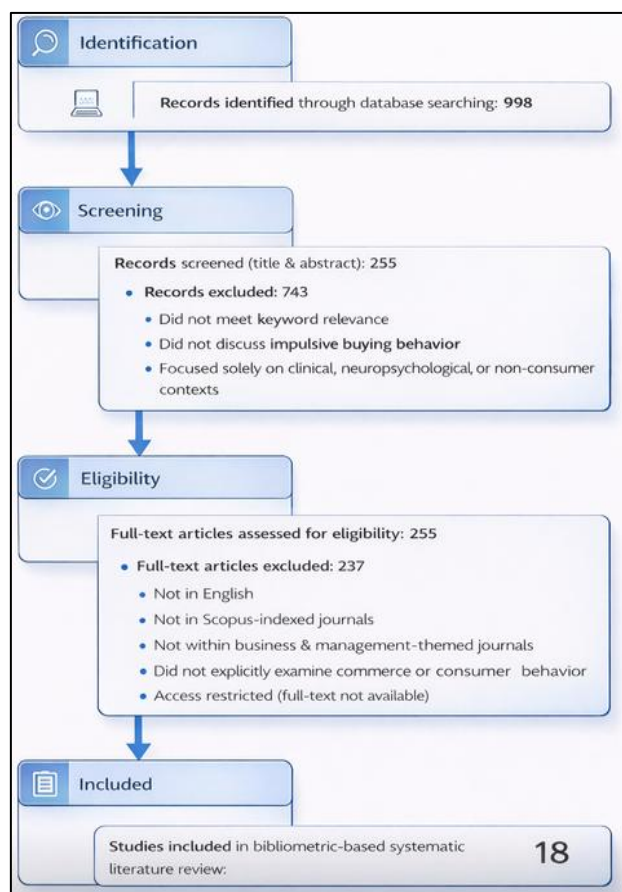


Figure 3. PRISMA Flow Diagram

The PRISMA flow diagram, as shown in Figure 3, documents the selection process. After an initial identification of 998 records, 743 were disqualified during the title and abstract review phase for reasons such as irrelevance, non-consumer focus, or a lack of emphasis on impulsive purchasing. Subsequently, 255 articles proceeded to full-text assessment. At the eligibility stage, 237 articles were excluded because they failed to meet criteria such as being in English, indexed by Scopus, aligned with the discipline, relevant to commerce or consumer behaviour, and having accessible full texts. This process resulted in 18 studies retained for bibliometric and qualitative synthesis.

Table 1 indicates three dominant structural patterns across these 18 studies. First, the focus of affective mechanisms is predominantly on pleasure and arousal, with only 4 studies (22%) fully incorporating the PAD structure, which includes dominance. The remaining 78% of studies have simplified affective mechanisms and concentrated only on pleasure-arousal pairings or a general sense of positive affect. Second, SOR integration is inconsistent, with only 7 studies explicitly developing analyses using the SOR architecture, while the rest applied an implicit stimulus–affect–behaviour logic without formal theoretical grounding. Third, outcome variables are concentrated on impulsive buying and related short-term constructs such as impulse purchase intention, urge to buy impulsively, and impulsive consumption. However, there is a notable lack of attention given to longer-term engagement outcomes, including customer loyalty or the intention to continue using a product or service.

The collective findings reveal a two-tiered fragmentation: PAD is only partially put into practice, and its integration into SOR structures is inconsistent. The predominance of pleasure–arousal pathways with a lack of attention to dominance constrains explanatory power and reinforces the need for a more comprehensive PAD–SOR integration that incorporates perceived control with affective activation.

Publication Years Trend

Figure 4 illustrates the publication trend of the 18 selected articles across 2022–2026. The distribution reveals a significant surge in publications during 2022 and 2023, with 5 studies published each year, which indicates a rapid acceleration in research on live-streaming commerce and affect-based consumer responses throughout this time. Subsequently, the volume then drops sharply in 2024 (two publications), followed by a rebound in 2025 (four publications), before declining again in 2026 (two publications). The lower count in 2026 should be interpreted with care, as this figure probably accounts for data covering only part of the year and the inclusion of early-access or in-press articles, rather than a genuine decline in scholarly attention. Overall, the surge–dip–rebound pattern indicates that the domain is still evolving, with research output fluctuating yet staying active as scholars explore affective mechanisms related to impulsive buying in live-streaming commerce.

The Integration of PAD Theory in Electronic Commerce Consumer Behaviour Research

Within the PAD framework proposed by Mehrabian and Russell (1974), dominance represents an individual’s perceived control and autonomy within a given environment. However, a review of the live-streaming commerce literature indicates that this element has increasingly been sidelined in empirical frameworks, with the key analytical interests now shifting towards pleasure and, more prominently, arousal. For example, Wang et al. (2025) demonstrated that impulsive buying is primarily mediated by cognitive trust and emotional arousal. The feeling of trust, combined with a sense of arousal, has a more compelling influence on impulsive buying when consumers foresee potential regret. However, dominance is not incorporated into their model. These findings imply that consumer decision-making in live-streaming environments is explained largely through affective activation and heuristic trust mechanisms rather than perceived personal control.

This simplification of PAD to a pleasure–arousal structure is also evident in the work of Xiao et al. (2026), who showed that live-streaming content characteristics can lead to impulse buying, mainly mediated through pleasure and arousal. The lack of operationalisation for dominance highlights that it is a common approach in digital SOR research that tends to prioritise emotional elements that are easily measured and consistently stable. Similarly, Assiouras et al. (2025) found that pleasure can significantly predict the visit intention in virtual-reality settings, while arousal produces inconsistent effects and dominance is absent from the analytical framework. These patterns suggest that even in immersive digital environments, perceived control is seldom considered as a primary explanation for user experiences.

Table 1. Characteristics of the Reviewed Articles

No	Author	Year	Publisher	PAD	SOR	Consumer Behavior
1	Yingjie Xu, and Yanya Ruan	2023	Electronic Commerce Research and Applications (Elsevier)	Pleasure, Arousal, Dominance	Yes	Consumer engagement
2	Mingwei Li, Qingjin Wang, and Ying Cao	2022	International Journal of Environmental Research and Public Health (MDPI)	Arousal, Pleasure	Yes	Impulsive buying
3	Thi Thuy An Ngo, Hoang Lan Thanh Nguyen, Hoang Phi Nguyen, Ho Truc Anh Mai, Thi Huyen Tran Mai, and Phuoc Long Hoang	2024	Heliyon (Elsevier)	Arousal, Pleasure	Not applied	Online impulsive buying
4	Guangming Li, Yue Jiang, and Liting Chang	2022	Frontiers in Psychology	Arousal, Pleasure	Not applied	Impulsive purchase intention
5	Prio Utomo, Arta Moro Sundjaja, Sanjar Mirzaliyev, and Hui-Ling Huang	2025	Journal of Creative Communications (Sage)	Arousal	Not applied	Impulsive purchase intention
6	Zhen Huang, Yidan Zhu, Andi Hao, and Jia Deng	2022	Journal of Research in Interactive Marketing (Emerald Insight)	Positive emotion (Pleasure)	Not applied	Purchase intention
7	Xinjia Tong, Yuangao Chen, Shasha Zhou, Shuiqing Yang, and Hui Jiang	2023	Electronic Commerce Research and Applications (Elsevier)	Arousal, Pleasure	Yes	Behavioral intention
8	Bingjia Shao, Yinghui Zhu, Pianpian Yang, and Yan Qin	2026	Journal of Retailing And Consumer Services (Elsevier)	Arousal	Not applied	Brand attitude
9	Chengmin Wang, Baohua Chen, Shoufeng Hu, and Jiahui Li	2025	Frontiers in Communication	Arousal	Yes	Impulsive buying behavior
10	En Xiao, Chang Su, Li Lu, Rixin Qin, Zhong Li, and Di Wang	2026	Acta Psychologica (Elsevier)	Arousal, Pleasure	Yes	Impulsive purchase intention
11	Binbin Sun, Yu Zhang, and Li Zheng	2023	Heliyon (Elsevier)	Arousal, Pleasure	Yes	Impulsive buying
12	Pei-San Lo a, Yogesh K. Dwivedi Eugene Cheng-Xi Aw, Garry Wei-Han Tan, and Bhimaraya Metri	2022	Journal of Business Research (Elsevier)	Arousal, Pleasure	Not applied	Impulsive buying behavior
13	Ioannis Assiouras, Antonios Giannopoulos, Eleni Mavragani, and Dimitrios Buhalis	2025	Current Issues in Tourism (Taylor & Francis)	Arousal, Pleasure	Not applied	Visit intention
14	Li-Keng Cheng, and Hsien-Long Huang	2022	Journal of Hospitality and Tourism Management (Elsevier)	Arousal, Pleasure, Dominance	Not applied	Continuance usage intention
15	Zhenwu You, Meng Wang, and Yangjin Shamu	2023	Humanities and Social Sciences Communications (Emerald Insight)	Pleasure, arousal, and dominance	Not applied	Social support willingness
16	Jiada Chen, and Junyun Liao	2023	Theoretical and Applied Electronic Commerce Research (MDPI)	Arousal, Pleasure	Yes	Impulsive buying
17	Jinpeng Wen, Xiaohua Li, and Hongxing Han	2025	Journal of Electronic Commerce Research (MDPI)	Arousal	Yes	Impulsive consumption
18	Yu Xiang Xia, Seong Wook Chae, and Yi Cai Xiang	2024	Frontiers in Psychology	Arousal, Pleasure	Not applied	Urge to buy Impulsively

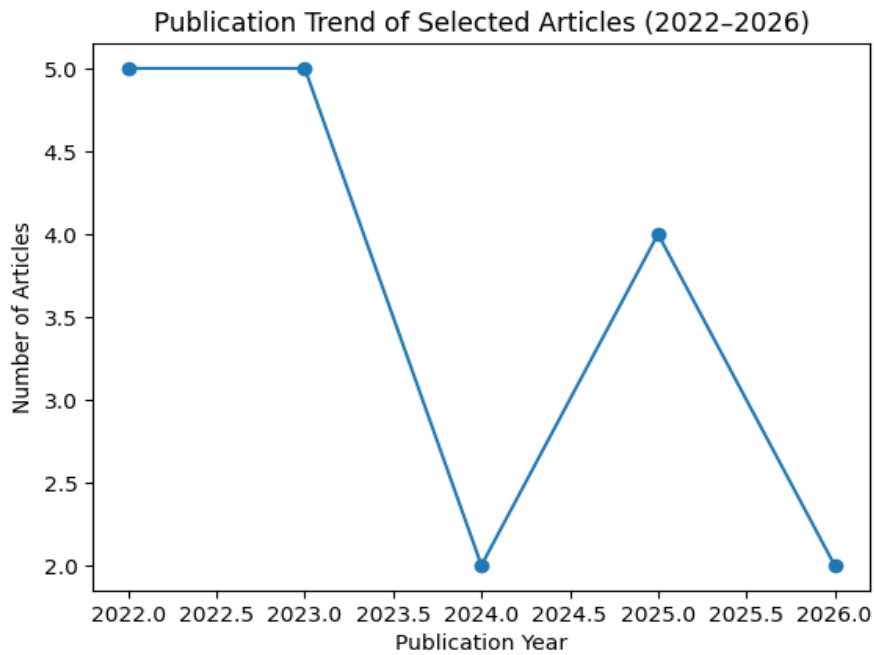


Figure 4. Publication Years Trend

The social presence literature further reinforces this trajectory. You et al. (2023) demonstrated that network social presence influences behavioural outcomes through parasocial interaction and affective responses, whereas Huang et al. (2023) showed that purchase intention is mediated by immersive experience and moderated by positive affect. Both situations rely heavily on immersion and affective resonance as primary psychological mechanisms, leaving the perceived control unexamined. Structurally, live-streaming platforms are designed to heighten engagement, accelerate decision-making, and intensify affective absorption, which will position consumers as immersed participants rather than independent individuals in charge of their experience.

Situational factors such as time pressure provide additional evidence of this imbalance. Sun et al. (2023) revealed that time pressure can trigger impulsive buying by shaping consumers' perceptions and emotions, specifically by increasing the perceived value of the products or services and heightening emotional responses, both positive and negative. Theoretically, time pressure should attenuate dominance by reducing perceived control. However, this notion is not explicitly modelled, indicating that diminished control is treated as an implicit contextual feature rather than a quantifiable construct. In contrast, recent research increasingly foregrounds arousal as the principal atmospheric mechanism. Shao et al. (2026), for instance, conceptualised arousal as the central integrative mechanism through which environmental cues influence consumer attitudes and brand congruence.

Collectively, the marginalisation of dominance in the research of live-streaming consumer behaviour can be attributed to three interrelated developments. *First*, platform architectures deliberately limit user autonomy through urgency cues and psychological stimulation techniques. *Second*, the evolution of the SOR framework in digital commerce has simplified PAD into a pleasure–arousal structure due to its clearer operationalisation and stronger predictive consistency. *Third*, there has been a paradigmatic shift from

agency-centred explanations toward immersion-centred models emphasising affective engagement. As a result, dominance is rarely positioned as an explicit determinant of behaviour and is instead implicitly embedded within stimulus design. This intentional oversight limits the explanatory capabilities of the current model, and therefore it is necessary to reintegrate perceived control into PAD–SOR analyses of live-streaming commerce.

Conceptual Integration of PAD and SOR

Several studies explicitly integrated the PAD framework into the SOR structure by positioning pleasure, arousal, and dominance as affective processes operating at the organism stage. This pattern is noticeable in the works of M. Li et al. (2022), Sun et al. (2023), Tong et al. (2023), Wen et al. (2025), Xiao et al. (2026), and Xu et al. (2020). In these models, live-streaming stimuli such as interactive atmospheres, urgency cues, promotional intensity, and social signals are assumed to trigger affective responses that subsequently mediate behavioural outcomes, including consumer engagement, behavioural intention, and impulsive buying. PAD, in this configuration, does not operate as its own theoretical system but rather as the embedded psychological engine that mediates the impact of environmental stimuli on behavioural reactions within the wider SOR structure.

Despite this explicit integration, most studies operationalised only two dimensions of PAD, namely pleasure and arousal, while dominance is rarely incorporated. Only a limited number of studies, such as those reported by Xia et al. (2024), Xu and Ruan (2023), and You et al. (2023), applied the full three-dimensional structure. The predominance of arousal reflects a consistent emphasis on activation, excitement, urgency, and stimulation as principal drivers of impulsive buying in live-streaming environments. This emphasis suggests that affective intensity, rather than perceived control, has taken precedence as the key factor explaining phenomena in today's digital marketplace.

It is noteworthy that while some research does not formally cite SOR as its theoretical basis, its structure nonetheless follows a stimulus-affect-behaviour pattern. Research by Assiouras et al. (2025), Huang et al. (2023), G. Li et al. (2022), Ngo et al. (2024), Shao et al. (2026), Sun et al. (2023), Utomo et al. (2025), Wen et al. (2025), Xia et al. (2024), and You et al. (2023) examined how situational or environmental factors influence pleasure and/or arousal, which subsequently shape behavioural outcomes. This recurring structure indicates that SOR frequently operates as an implicit conceptual architecture, while PAD functions as the primary operational tool for capturing affective responses. In other words, theoretical integration often takes place structurally, regardless of whether it is explicitly acknowledged.

Regarding dependent variables, the integration of PAD and SOR is heavily concentrated on impulsive behaviours, with most studies focusing on impulsive buying (Chen & Liao, 2022; M. Li et al., 2022; Sun et al., 2023), impulsive purchase intention (G. Li et al., 2022; Xiao et al., 2026), urge to buy impulsively (Xia et al., 2024), and impulsive consumption (Wen et al., 2025). Alternative outcomes, including brand attitude (Shao et al., 2026), visit intention (Assiouras et al., 2025), continuance usage intention (Cheng & Huang, 2022), and social support willingness (You et al., 2023), remain comparatively underrepresented. The data show that PAD–SOR integration has primarily

been used to account for impulsive and fleeting decision-making, instead of continuous engagement, deep relational bonds, or enduring consumer loyalty.

Overall, the literature demonstrated that PAD has been internalised as the affective mechanism within SOR-based models. However, its application remains partial and asymmetrical, as some emotional dimensions are emphasised, others neglected. Arousal emerges as the most dominant dimension, pleasure functions as a consistent supporting construct, and dominance remains marginal. By emphasising impulsive outcomes, these models offer a restricted view of what they can account for. The findings suggest an opportunity to develop a more comprehensive integrative framework by reintroducing dominance as a central concept in PAD–SOR analyses. Alternatively, behavioural outcomes could be broadened beyond impulsivity to include sustainability-focused engagement and long-term relationship development within live-streaming commerce ecosystems.

Emotional Mechanisms Underlying Impulsive Buying

The literature consistently shows that impulsive buying in live-streaming commerce is primarily an affect-driven phenomenon activated by digital stimuli and real-time social interaction. Within the PAD framework, pleasure and arousal repeatedly emerge as the dominant psychological mechanisms linking environmental cues such as time pressure, social presence, content vividness, and streamer characteristics to impulsive purchasing behaviour. Sun et al. (2023) showed that time pressure influences impulsive buying predominantly through affective mechanisms rather than cognitive evaluation. Their findings indicated that positive affect amplifies, while negative affect diminishes this effect, and that perceived value serves as an additional mediating factor in the relationship. In other words, impulse decisions in live-streaming contexts are largely fuelled by emotional choices rather than logical reasoning.

Empirical evidence further supports this mechanism. The finding of G. Li et al. (2022) and Xia et al. (2024) revealed that pleasure and arousal play a crucial role in how social and media cues lead to impulsive purchasing, explaining more than perceived uncertainty does. In this configuration, pleasure promotes approach-oriented motivation toward products, whereas arousal intensifies psychological activation and urgency, and this will incite spontaneous decision-making. Additional studies by Utomo et al. (2025), Wang et al. (2025), and Wen et al. (2025) confirmed that pleasure and, particularly, arousal, function as the principal affective channel that connects interaction quality, key opinion leader characteristics, and cognitive trust to impulse buying intention. Planned purchasing processes, in contrast, play a comparatively limited role in these models.

Even though pleasure and arousal are robust concepts for explaining impulsive purchasing, the dimension of dominance is rarely explored in research. Dominance represents consumers' perceived sense of control and autonomy within an environment, a factor that is especially relevant in live-streaming contexts characterised by urgency cues, limited-time offers, and persuasive social interaction. The systematic omission of dominance produces an incomplete account of the affective mechanisms underlying impulsive buying. A reduced feeling of control, rather than just the pursuit of pleasure and excitement, can also drive impulsive behaviour. Emotional activation is captured by current models without dominance, but they fall short in explaining the contribution of decreased autonomy and perceived control to spontaneous consumption choices.

Theoretical Implications

This study contributes to the live-streaming commerce literature by advancing a deeper theoretical integration of the PAD model and the SOR framework. While prior research has extensively applied both frameworks, their integration has largely remained partial, linear, and affect-centric. The present review extends this body of knowledge in several important ways.

First, this study identifies and conceptualises the asymmetric operationalisation of PAD within the research of live-streaming commerce. Empirical models, by prioritising pleasure and arousal and consistently overlooking the aspect of dominance, reveal an incomplete understanding of emotional structure. By reintroducing dominance as a core regulatory construct, this study challenges the prevailing reduction of PAD to a two-dimensional affective mechanism. Theoretically, this repositioning can restore the original three-dimensional integrity of PAD and highlight the importance of perceived control in digitally immersive environments.

Second, this review re-conceptualises the integration of PAD within the SOR framework. Rather than viewing PAD dimensions as simple links in a straightforward stimulus-emotion-response sequence, this research suggests a regulatory perspective where pleasure, arousal, and dominance function as interconnected emotional influences. In this structure, arousal acts as an activation accelerator, pleasure serves as motivational reinforcement, and dominance functions as a regulatory gatekeeper. This reconceptualisation enriches the organism stage of SOR by replacing a simple mediation logic with a richer, more dynamic account of how people regulate their emotions.

Third, the findings suggest a broader paradigm shift in digital commerce research from consumer agency toward consumer immersion. The design of live-streaming platforms, featuring urgency signals, immediate interaction, and amplified social proof, effectively boosts emotional engagement but reduces users' perceived control. The neglect of dominance in previous studies may therefore reflect not only methodological simplification but also an implicit theoretical orientation that privileges emotional engagement over autonomous control. By foregrounding dominance, this study rebalances the theoretical discourse and reopens discussion on consumer agency within algorithmically mediated environments.

Fourth, this study expands the scope of behavioural interpretation in live-streaming commerce. Existing research predominantly focuses on short-term impulsive outcomes, reinforcing a transactional perspective of consumer behaviour. By weaving the concept of dominance into the emotional framework, the current system allows an effective differentiation between quick, impulsive actions and those driven by a desire for long-term commitment. This lays the groundwork for future investigations into how emotional configurations shape both immediate purchasing behaviour and long-term relational stability.

Finally, at a meta-theoretical level, this review contributes to the evolution of emotion-based consumer behaviour models in immersive digital ecosystems. It demonstrates that emotional processes in live-streaming commerce cannot be fully understood through activation alone. Instead, a comprehensive explanation requires simultaneous consideration of affective intensity and perceived control. This study moves beyond seeing PAD solely as a measurement device, instead framing it as a core element

in emotional self-control, to create a more integrated and conceptually sound framework for upcoming research in interactive digital commerce.

CONCLUSIONS AND RECOMMENDATIONS

This study synthesises the integration of the PAD model and the SOR framework in live-streaming commerce through a bibliometric-based systematic literature review. The analysis reveals a structurally fragmented body of research in which emotional mechanisms are predominantly operationalised through pleasure and arousal, while dominance—representing perceived consumer control—remains marginal. Most empirical studies adopt a stimulus–emotion–behaviour logic, positioning arousal as the principal activation mechanism of impulsive buying and pleasure as reinforcement of approach tendencies. However, the limited incorporation of dominance constrains the explanatory scope of existing models, particularly in digitally immersive environments characterised by urgency and social intensification.

Theoretically, this study advances the literature in three key ways. *First*, it clarifies the structural role of PAD within SOR by positioning PAD as the organism-level affective system mediating digital stimuli and behavioural responses. *Second*, it reasserts dominance as a regulatory dimension essential for understanding the balance between emotional activation and perceived autonomy. *Third*, it broadens the behavioural lens of PAD–SOR integration beyond short-term impulsive outcomes toward sustained engagement, relational continuity, and long-term consumer commitment.

Practically, the findings highlight that live-streaming features designed to amplify arousal—such as time-limited promotions, high-frequency interaction cues, and immersive interface design—may stimulate impulsive purchasing partly by diminishing perceived control. Platform designers and digital marketers should therefore balance affective stimulation with transparency-enhancing and autonomy-supporting mechanisms to foster both engagement and responsible decision-making.

Methodologically, the combined use of bibliometric mapping and systematic qualitative synthesis offers a structured approach to diagnosing theoretical fragmentation in emerging digital commerce domains. Future research should explicitly reintegrate dominance into PAD–SOR configurations, particularly in high-pressure environments, and extend outcome variables to encompass trust formation, loyalty, and continued usage intention. Comparative studies across platform designs and cultural contexts may further illuminate how technological architectures shape emotional regulation and consumer agency in immersive digital marketplaces.

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REFERENCES

- Aria, M., & Cuccurullo, C. (2017). bibliometrix: An R-tool for comprehensive science mapping analysis. *Journal of Informetrics*, *11*(4), 959–975. <https://doi.org/10.1016/j.joi.2017.08.007>
- Assiouras, I., Giannopoulos, A., Mavragani, E., & Buhalis, D. (2025). Virtual reality facilitated travel inspiration: The role of pleasure and arousal. *Current Issues in Tourism*, *28*(23), 3851–3864. <https://doi.org/10.1080/13683500.2024.2406412>
- Bui, C. T., Ngo, T. T. A., Chau, H. K. L., & Tran, N. P. N. (2025). How perceived eWOM in visual form influences online purchase intention on social media: A research based on the SOR theory. *PLOS ONE*, *20*(7), e0328093. <https://doi.org/10.1371/journal.pone.0328093>
- Chen, J., & Liao, J. (2022). Antecedents of viewers' live streaming watching: A perspective of social presence theory. *Frontiers in Psychology*, *31*(13), 839629. <https://doi.org/10.3389/fpsyg.2022.839629>
- Cheng, L. K., & Huang, H. L. (2022). Virtual tourism atmospheres: The effects of pleasure, arousal, and dominance on the acceptance of virtual tourism. *Journal of Hospitality and Tourism Management*, *53*, 143–152. <https://doi.org/10.1016/j.jhtm.2022.10.002>
- Chung, X. L., Yasmin, F., Haider, S. A., Sinnappan, P., Poulová, P., Baskaran, S., Tehseen, S., & Idris, I. (2025). Impulsive buying behaviour in live-streaming commerce: An application of S-O-R theory. *Cogent Social Sciences*, *11*(1), 2474861. <https://doi.org/10.1080/23311886.2025.2474861>
- Dai, X. (2024). Application and effect evaluation of visual marketing in live e-commerce. *Journal of Advanced Academic Research and Studies*, *1*(3), 9–25.
- Deng, Z., Jiang, Y., & Wang, J. (2024). Travel live-streaming empowerment amid crises: A processual and psychological view. *Current Issues in Tourism*, *27*(3), 341–349. <https://doi.org/10.1080/13683500.2023.2214355>
- Donthu, N., Kumar, S., Mukherjee, D., Pandey, N., & Lim, W. M. (2021). How to conduct a bibliometric analysis: An overview and guidelines. *Journal of Business Research*, *133*, 285–296. <https://doi.org/10.1016/j.jbusres.2021.04.070>
- Duong, N. T. H., & Ta, M. Q. (2024). Investigating online purchase intention of Gen Z on TikTok live stream shopping. *Economics and Business Administration*, *15*(4), 71–89. <https://doi.org/https://doi.org/10.46223/HCMCOUJS.econ.en.15.4.3416.2025>
- Gumay, E. C., Bangsawan, S., & Pandjaitan, D. R. H. (2024). The influence of social presence on impulsive behavior buy gen Z on live streaming e-commerce shopee with Sor framework. *Journal of Social Research*, *3*(7), 1–12. <https://doi.org/https://doi.org/10.55324/josr.v3i7.2171>
- Gusenbauer, M., & Haddaway, N. R. (2020). Which academic search systems are suitable for systematic reviews or meta-analyses? Evaluating retrieval qualities of Google Scholar, PubMed, and 26 other resources. *Research Synthesis Methods*, *11*(2), 181–217. <https://doi.org/10.1002/jrsm.1378>
- Haddaway, N. R., Collins, A. M., Coughlin, D., & Kirk, S. (2015). The role of google scholar in evidence reviews and its applicability to grey literature searching. *PLoS ONE*, *10*(9), e0138237. <https://doi.org/10.1371/journal.pone.0138237>

- Hong-Ngoc, T. (2025). Fear of missing out (FOMO) and impulsive buying on TikTok shop: A study using the stimulus-organism-response (SOR) model. *SEARCH Journal of Media and Communication Research*, 17(2), 87–104. <https://doi.org/10.58946/search-17.2.P6>
- Hovland, C. I., Janis, I. L., & Kelley, H. H. (1953). *Communication and Persuasion: Psychological Studies of Opinion Change*. Yale University Press.
- Huang, Z., Zhu, Y., Hao, A., & Deng, J. (2023). How social presence influences consumer purchase intention in live video commerce: the mediating role of immersive experience and the moderating role of positive emotions. *Journal of Research in Interactive Marketing*, 17(4), 493–509. <https://doi.org/10.1108/JRIM-01-2022-0009>
- Lai, P., Aw, E. C.-X., & Tan, G. W.-H. (2025). Empowerment to commitment: How live-streaming atmosphere and relational bonds drive impulse consumption? *Journal of Research in Interactive Marketing*, 19(4), 549–570. <https://doi.org/10.1108/JRIM-03-2024-0131>
- Li, G., Jiang, Y., & Chang, L. (2022). The influence mechanism of interaction quality in live streaming shopping on consumers' impulsive purchase intention. *Frontiers in Psychology*, 13, 918196. <https://doi.org/10.3389/fpsyg.2022.918196>
- Li, M., Wang, Q., & Cao, Y. (2022). Understanding consumer online impulse buying in live streaming e-commerce: A stimulus-organism-response framework. *International Journal of Environmental Research and Public Health*, 19(7), 4378. <https://doi.org/10.3390/ijerph19074378>
- Liang, X., Huo, Y., & Luo, P. (2024). What drives impulsive travel intention in tourism live streaming? A chain mediation model based on SOR framework. *Journal of Travel & Tourism Marketing*, 41(2), 169–185. <https://doi.org/10.1080/10548408.2024.2310175>
- Lin, S.-C., Tseng, H.-T., Shirazi, F., Hajli, N., & Tsai, P.-T. (2023). Exploring factors influencing impulse buying in live streaming shopping: A stimulus-organism-response (SOR) perspective. *Asia Pacific Journal of Marketing and Logistics*, 35(6), 1383–1403. <https://doi.org/10.1108/APJML-12-2021-0903>
- Liu, M., Chen, X., Yang, B., & Gao, Y. (2025). The role of social presence in impulsive buying during live streaming e-commerce: Exploring the mechanisms of customer inspiration and positive emotion. *BMC Psychology*, 13(1414), 1414. <https://doi.org/10.1186/s40359-025-03743-4>
- Mardhiana, H. R. (2024). Gen Z's impulse buying behavior of shopping through live-streaming social commerce platforms: Investigating the role of parasocial interaction and social commerce emotional motivation. *Journal of Social Sciences and Humanities*, 3(3), 29–50. <https://doi.org/doi.org/10.56943/jssh.v3i3.588>
- Mehrabian, A., & Russell, J. A. (1974). *An approach to environmental psychology*. The MIT Press.
- Min, Y., & Tan, C. C. (2022). A stimulus-organism-response (S-O-R) framework for live streaming commerce with a socio-technical perspective. *International Journal of Arts and Social Science*, 5(4), 118–140. <https://www.ijassjournal.com/2022/V5I4/414665491.pdf>
- Ngo, T. T. A., Nguyen, H. L. T., Nguyen, H. P., Mai, H. T. A., Mai, T. H. T., & Hoang, P. L. (2024). A comprehensive study on factors influencing online impulse buying

- behavior: Evidence from Shopee video platform. *Heliyon*, 10(1), e35743. <https://doi.org/https://doi.org/10.1016/j.heliyon.2024.e35743>
- Paul, J., Lim, W. M., O’Cass, A., Hao, A. W., & Bresciani, S. (2021). Scientific procedures and rationales for systematic literature reviews (SPAR-4-SLR). *International Journal of Consumer Studies*, 45(4), O1–O16. <https://doi.org/10.1111/ijcs.12695>
- Shao, B., Zhu, Y., Yang, P., & Qin, Y. (2026). When sparks fly: How arousal-driven atmospheres, brand positioning, and consumer traits collide in live-streaming ecosystems. *Journal of Retailing and Consumer Services*, 88, 104534. <https://doi.org/10.1016/j.jretconser.2025.104534>
- Sun, B., Zhang, Y., & Zheng, L. (2023). Relationship between time pressure and consumers’ impulsive buying—Role of perceived value and emotions. *Heliyon*, 9(12), e23185. <https://doi.org/10.1016/j.heliyon.2023.e23185>
- Tan, K. L., Hii, I. S. H., Lim, X. J., & Wong, C. Y. L. (2024). Enhancing purchase intentions among young consumers in a live-streaming shopping environment using relational bonds: Are there differences between “buyers” and “non-buyers”? *Asia Pacific Journal of Marketing and Logistics*, 36(1), 48–65. <https://doi.org/10.1108/APJML-01-2023-0048>
- Tong, X., Chen, Y., Zhou, S., Yang, S., & Jiang, H. (2023). Do atmospheric cues matter in live streaming e-commerce? An eye-tracking investigation. *Electronic Commerce Research and Applications*, 62, 101334. <https://doi.org/10.1016/j.elerap.2023.101334>
- Utami, Z. L. (2024). The influence of flash sale and shopee live on impulsive buying behavior in marketing management students. *MAMEN: Jurnal Manajemen*, 3(3), 155–165. <https://doi.org/https://doi.org/10.55123/mamen.v3i3.3893>
- Utomo, P., Sundjaja, A. M., Mirzaliev, S., & Huang, H. L. (2025). Lost in the stream: Unravelling the triggers of impulsive buying on live shopping platforms. *Journal of Creative Communications*, 20(3), 421–440. <https://doi.org/10.1177/09732586251363710>
- van Eck, N. J., & Waltman, L. (2022). VOSviewer manual. *Univeriteit Leiden*. http://www.vosviewer.com/documentation/Manual_VOSviewer_1.6.1.pdf
- Wang, C., Chen, B., Hu, S., & Li, J. (2025). Streamer interaction and consumer impulsive buying in live-stream commerce: the mediating roles of trust and emotional arousal with anticipated regret as boundary condition. *Frontiers in Communication*, 10, 1547639. <https://doi.org/10.3389/fcomm.2025.1547639>
- Wen, J., Li, X., & Han, H. (2025). Emotional resonance and buying behavior in live streaming: A study on KOL influence and the mediation of purchase intentions. *Journal of Theoretical and Applied Electronic Commerce Research*, 20(2), 108. <https://doi.org/10.3390/jtaer20020108>
- Xia, Y. X., Chae, S. W., & Xiang, Y. C. (2024). How social and media cues induce live streaming impulse buying? SOR model perspective. *Frontiers in Psychology*, 15, 1379992. <https://doi.org/10.3389/fpsyg.2024.1379992>
- Xiao, E., Su, C., Lu, L., Qin, R., Li, Z., & Wang, D. (2026). Factors affecting impulse buying behavior in the context of e-commerce live streaming. *Acta Psychologica*, 262, 106183. <https://doi.org/10.1016/j.actpsy.2025.106183>

- Xu, X., Wu, J.-H., & Li, Q. (2020). What drives consumer shopping behavior in live streaming commerce? *Journal of Electronic Commerce Research*, 21(3), 144–167. <http://www.jecr.org/node/609>
- Xu, Y., & Ruan, Y. (2023). AI and human broadcasters: Relative impact on consumer engagement in live streaming commerce. *Electronic Commerce Research and Applications*, 62, 101335. <https://doi.org/https://doi.org/10.1016/j.elerap.2023.101335>
- You, Z., Wang, M., & Shamu, Y. (2023). The impact of network social presence on live streaming viewers' social support willingness: a moderated mediation model. *Humanities and Social Sciences Communications*, 10(1), 385. <https://doi.org/10.1057/s41599-023-01892-8>
- Zhang, M., & Shi, G. (2022). Consumers' impulsive buying behavior in online shopping based on the influence of social presence. *Computational Intelligence and Neuroscience*, 2022(1), 6794729. <https://doi.org/10.1155/2022/6794729>
- Zhang, X., Chen, H., & Liu, Z. (2024). Operation strategy in an e-commerce platform supply chain: Whether and how to introduce live streaming services? *International Transactions in Operational Research*, 31(2), 1093–1121. <https://doi.org/10.1111/itor.13186>
- Zhu, X., & Vijayan, S. K. (2025). Antecedents of impulse purchase through perceived enjoyment among Chinese live streaming commerce consumers. *SAGE Open*, 15(3), 1–17. <https://doi.org/10.1177/21582440251357159>
- Zupic, I., & Čater, T. (2015). Bibliometric methods in management and organization. *Organizational Research Methods*, 18(3), 429–472. <https://doi.org/10.1177/1094428114562629>